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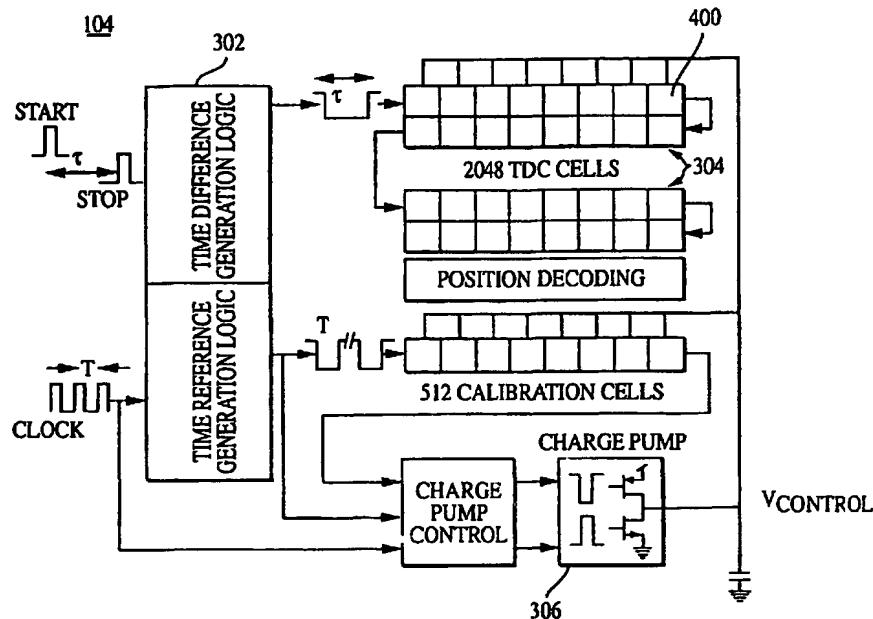
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**(54) Title: THE TIME OF FLIGHT SYSTEM ON A CHIP**



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**(57) Abstract:** A CMOS time-of-flight "TOF" system-on-a-chip "SoC" for precise time interval measurement with low power consumption and high counting rate has been developed. The analog and digital TOF chip may include two Constant Fraction Discriminators "CFDs" and a Time-to-Digital Converter "TDC". The CFDs can interface to start and stop anodes through two preamplifiers and perform signal processing for time walk compensation (110). The TDC digitizes the time difference with reference to an off-chip precise external clock (114). One TOF output is an 11-bit digital word and a valid event trigger output indicating a valid event on the 11-bit output bus (116).